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09/596,837	06/19/2000	Vladimir Vaganov	SS-714-01	2878

7590

07/30/2003

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EXAMINER

GOUDREAU, GEORGE A

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

Applicant(s)

09-596,837

Vaganov

Examiner

Group Art Unit

George Goudreau

1763

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- ☒ Responsive to communication(s) filed on 5-03' (ie, - paper #5)
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 1-115 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☒ Claim(s) 56-65, 72-119, 112-115 is/are allowed.
- ☒ Claim(s) 1-12, 20-22, 31-34, 42-43, 46-54, 111 is/are rejected.
- ☒ Claim(s) 13-19, 23-30, 35-41, 44-45, 55, 66-71 is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

## Application Papers

- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some\* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☐ Interview Summary, PTO-413
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other \_\_\_\_\_

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15. This action will not be made final due to the new grounds of rejection.

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 1-7, and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by  
Laou et. al. (5,857,885).

Laou et. al. disclose a two step etching process for etching a trench into a CZ-Si wafer which is comprised of the following steps:

-A patterned SiO<sub>2</sub> or Si<sub>3</sub>N<sub>4</sub> hard mask (8) is formed onto the surface of the <100> plane of a CZ-Si wafer.;

-The Si wafer is isotropically wet etched in a (HNO<sub>3</sub>-HF-acetic-H<sub>2</sub>O) solution.;

-A Cr or Mo layer is deposited onto the surface of the wafer.;

-The Si wafer is anisotropically wet etched along the <111> plane using a (KOH-H<sub>2</sub>O) solution.

This is discussed specifically in columns 3-4; and discussed in general in columns 1-6.

This is shown in figures 1-14.

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18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference as applied in paragraph 17 above.

The reference as applied in paragraph 17 above fail to disclose the following aspects of applicant's claimed invention:

-the specific usage of ultrasonic or megasonic vibration of the wet etchant during the wet etching steps

It would have been obvious to one skilled in the art to employ ultrasonic or megasonic means to the wet etchant during any of the wet etching steps taught above based upon the following. The usage of ultrasonic or megasonic means to enhance a wet etching process is conventional or at least well known in the wet etching arts. (The examiner takes official notice in this regard.) Further, the usage of such means to enhance a wet etching process would desirably provide a means for accelerating the wet etching process which would desirably increase the possible throughput of such a process.

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20. Claims 7-8, 11-12, 20-22, 31-34, 42-43, 46-54, and 111 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

-In claims 7-8, 12, 20-21, 31, 42-43, 46, 49, and 53, "said anisotropic" lacks proper antecedent basis.; and

-In claim 111, "parylen" should read "parylene".

21. Claims 13-19, 23-30, 35-41, 44-45, 55, and 66-71 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

22. Claims 56-65, 72-110, and 112-115 are allowed.

23. Claims 20-22, 31-34, 42-43, and 46-54 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.


24. Claim 111 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, set forth in this Office action.

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner George A. Goudreau whose telephone number is (703) -308-1915. The examiner can normally be reached on Monday through Friday from 9:30 to 6:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Examiner Gregory Mills, can be reached on (703) -308-1633. The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) -306-3186.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) -308-0661.

  
George A. Goudreau/gag

Primary Examiner

AU 1763